Meade® 8" and 10" LX200GPS Schmidt-Cassegrain Telescopes

A new world standard in telescopes.

Building on the legendary reputation of their predecessor LX200 telescopes and the result of a two-year design effort at the Meade Irvine facility, Meade LX200GPS models take previous telescope technology to a level heretofore unimagined. Announced in September, 2001, few telescopes in the thirty-year history of Meade Instruments have aroused such intense interest, or been so quickly accepted, among both beginning and experienced amateur astronomers.

New Heavy-Duty Fork Mounts: All-new LX200GPS fork mounts are the strongest, most rigid mountings ever made available for telescopes of these apertures. DC-servo-motor-controlled (12v DC) worm gear drives with almost *two hundred* selectable drive speeds, combined with the Meade Smart Drive *(p. 24)* on *both* telescope axes, permit observatory-level precision in tracking, guiding, and slewing.

Photo-guide speeds are selectable from 0.01x to 1.0x sidereal, in increments of 0.01x; fast-slew speeds are selectable from 1°/sec. to 8°/sec. in 0.1°/sec. increments. Use the 8°/sec. speed for rapid motion of the telescope across the skies; once near the target, switch instantly to a speed of 1.5°/sec. or 3°/sec. for centering in the viewfinder. Observing in the main telescope, use the 16x or 64x sidereal speed to place the object in the center of the field.

Meade 8" *(shown)* **and 10" LX200GPS telescopes** include 145,000-object onboard databases. The standard-equipment Zero Image-Shift Microfocuser, powered from the telescope's control panel and operated from the Autostar II handbox, is shown immediately in front of the eyepiece and diagonal prism. The GPS receiver can be seen atop the telescope's fork arm.

Precision GPS Alignment: Telescope alignment is accomplished *automatically* using signals from the Global Positioning System (GPS), a satellite system that enables extremely precise communication to the telescope of the observer's latitude and longitude, as well as local time. Integrated true-level and North electronic sensors in combination with a 16-channel GPS receiver located in the left-hand fork arm result in accurate telescope alignment to the sky at the touch of a button: Just press the *ENTER* button on the Autostar II hand controller and watch as the telescope measures level, points North, and slews at 8°/sec. to its first alignment star. Magnetic declination compensation designed into the telescope software automatically engages during the alignment process.

"…Viewing a 2nd-magnitude star at high power [the 8" LX200] showed a nearly textbook-perfect image…I do indeed rank these optics as diffraction limited…Jupiter and Saturn exhibited riveting detail… During the November 10, 1997, triple shadow transit on Jupiter, the LX200 was my telescope of choice. It showed all three moon shadows as plainly different in size and shading, a rare and remarkable sight. Under the automatic GO TO command, the LX200 routinely placed objects, including the Moon and planets, within 1 to 4 arc-minutes of the center of the field. Not only was it accurate — it was fast. The LX200 usually took no longer than 10 to 25 seconds to slew to and center an object…The latest major feature added to the system is what Meade calls High Precision Pointing. When this is activated…Meade promises a pointing accuracy of 1 arc-minute. I can confirm this amazing figure. Objects consistently ended up within 1 to 2 arc-minutes of the field's center, a great aid to CCD imaging of faint targets…if you know what you want to look at, the LX200 will find it with astonishing speed and accuracy…the telescope I tested provided excellent performance in all critical areas while adding a level of technical luxury that is truly powerful and impressive…I have absolutely no hesitation in recommending the LX200 series…After having used the LX200 for several months, I can attest to the wonderful hands-off convenience and sheer fun of the motorized GO TO." — **from the review in *Sky & Telescope,* April, 1998.**

Autostar II Control System: Completely redesigned and updated for the LX200GPS series, the Meade Autostar II control system includes the widest array of telescope capabilities ever offered in a commercial telescope:

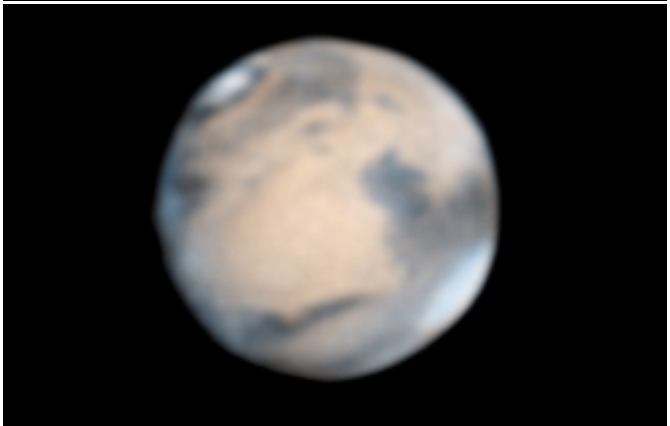
Built-in 145,000-Object Library Included as Standard Equipment: Enter into the Autostar II handbox any of the 145,000 celestial objects stored in the LX200GPS onboard database, press GO TO, and the telescope automatically slews (moves) to the object at 8°/sec., centering it precisely in the main telescope field. Additionally, the display reads out for each selected object its magnitude, size, object-type, visual quality rating, RA and Dec. Or, let the telescope take you on an automatic guided tour of *TONIGHT'S BEST*.

Stored in a 3.5-Megabyte flash memory, Autostar II's database is immediately accessible on the Autostar II display and includes an incredible array of phenomena — virtually a lifetime of deep-space study, even for the advanced observer. A partial listing includes:

Object List	No. of Objects
New General Catalog (NGC)	7840
Index Catalog (IC)	5386
Uppsala Galaxy Catalog	12,940
Morphological Catalog of Galaxies	12,939
General Catalog of Variable Stars	28,484
SAO and Hipparcos Star Catalogs	42,277
Draper Star Catalog (HD)	21,127
Yale Bright Star Catalog (BSC5)	6150
Large Bright Quasars Survey (LBQS)	1055
Messier Catalog (M)	110
Caldwell Catalog	109
Named Objects	227
Herschel Catalog	400
Abell Catalog of Galaxy Clusters	2712
Arp Catalog of Irregular Galaxies	645
Major planets from Mercury to Pluto	8
Lunar features	1870
Asteroids and Comets	120
Earth orbiting satellites	50
Centroids of the constellations	88

Additional Autostar II Functions: Dozens of additional handbox functions, all easily and immediately accessible, make Autostar II the most powerful electronic tool ever developed for the serious amateur. A partial listing of fewer than half of these functions includes: GO TO capability to any input RA and Dec. coordinates; a 200-object user-defined library; event menus displaying the times and/or dates of Sunrise/Sunset, Moonrise/Moonset, Moon phases, meteor showers, minimum of Algol, equinoxes and solstices; custom-guided tours defined by the user; standard tours including Tonight's Best; 24-hour timer with beeper; alarm function with beeper sounds at selected times; 16-level display brightness adjust; 16-level display contrast adjust; red-LED utility light; battery alarm for low-battery warning; 7 alignment modes; sidereal, lunar, or any of 2000 custom tracking rates; factory-trained Smart Drive *(see p. 24)* periodic error correction on both telescope axes with field-training capability.

High-resolution CCD images of Jupiter and Mars (shown not to scale), taken by António Cidadão of Oeiras, Portugal, with his Meade 10" LX200 Schmidt-Cassegrain. These images first appeared in an article by Mr. Cidadão entitled *Thoughts on Super-Resolution Planetary Imaging* in the December, 2001, issue of *Sky & Telescope. (See also p. 21.)*



Spiral Galaxy (M83) in Hydra. Nik Szymanek and Ian King combined two 10-minute CCD exposures through the Meade 10" LX200 Schmidt-Cassegrain telescope to obtain this final result.

"...The optical correction [of the 8" LX200GPS] is excellent and there is no sign of chromatic aberration. As shown in our Ronchi test, the bars are virtually straight and the optical surfaces are extremely smooth. This is the best Schmidt-Cassegrain optical system that we have ever tested. In addition, the image is very bright, caused, we assume, by the Ultra High Transmission Coatings on the correcting plate and mirrors...The zero image-shift focuser eliminates mirror-shift and makes for easy focusing of the image during astrophotography and high-power observing...This is an impressive telescope that permits almost limitless growth for the serious observer...and at a price that is hard to believe."

—from the review of the 8" LX200GPS in the May, 2002, issue of *Tenmon [Astronomical] Guide*, Japan.

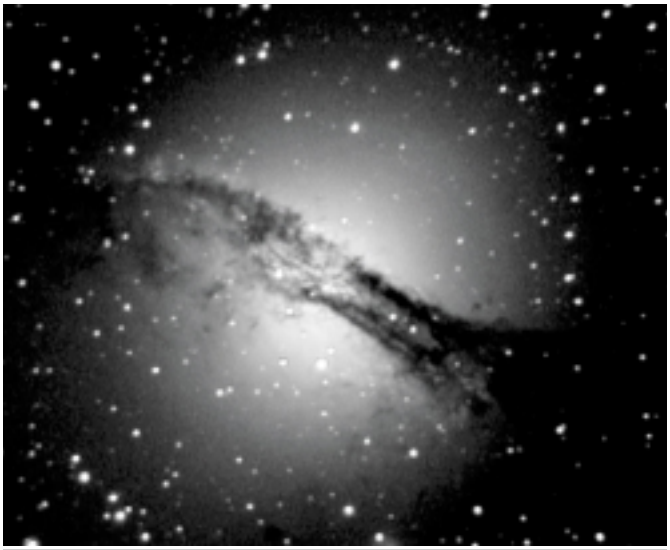
Primary Mirror Lock: This revolutionary new rear-cell system is designed for the advanced visual observer, astrophotographer, and CCD imager. Turn a knob located just above the manual coarse-focus knob, and lock the telescope's primary mirror rigidly in place. Used in conjunction with the Zero Image-Shift Microfocuser *(below)* the progressive-tension primary mirror lock completely cancels any residual image shift while focusing during visual, photographic, or CCD imaging applications.

Software Downloads and Satellite Tracking: The software included in Meade LX200GPS telescopes is under

continuous factory review; updates to this software are published at regular intervals. Importantly, the latest software version, as well as custom and updated guided tours, comet and asteroid positions, may be downloaded in minutes from the Meade website. Additionally, current Earth satellite orbital data (including the International Space Station, Space Shuttle, etc.) may be downloaded; the telescope then automatically acquires and tracks the

Zero Image-Shift Microfocuser: Now you can obtain extremely precise image focus — truly to a microscopic level — during visual and astrophotographic applications, and, during CCD applications, simultaneously maintain precise image centration on even the smallest CCD chips.

"Simply turn it on and this telescope aligns itself to the sky all by itself, ready to show you thousands of objects at the push of a button...Meade's 8-inch LX200GPS telescope is ideal for serious beginners, but its features target it to astro imagers and advanced amateurs as well…It could take years for an average observer to exhaust what a telescope of this aperture will show. And with Go To technology to point the way, it's a snap to find an almost endless supply of targets...images proved sharp and near-textbook perfect...Saturn and Jupiter snapped into crisp



The strong radio source Centaurus A (NGC 5128): This 7th-magnitude galaxy was CCD imaged by David Higgins of Canberra, Australia with the Meade 10" LX200GPS equipped with UHTC coatings. Mr. Higgins used the Meade f/3.3 focal reducer with extension tube for an effective telescope focal ratio of f/4.3. The final image above is a composite of four 240-second exposures.

focus...Moderately bright stars showed a well-defined Airy disk with a bright inner diffraction ring and fainter outer ring, just as expected for good optics of this type. Star testing revealed smooth and nearly identical diffraction disks on either side of focus...One improvement that Meade now offers as an option is the UHTC [coatings group]...Our tests show that the UHTC performs as advertised...the UHTC instrument delivered images that were about 15 percent brighter in the red, 14 percent in the green, and 19 percent in the blue...the new GPS scopes use a far more advanced Autostar II hand controller, which is the latest version of the Autostar system that we have praised highly in the past. During testing we encountered no software crashes, freezes, or error messages.

Turn on the scope, and after it completes an internal self test, it begins listening for signals from GPS satellites passing overhead. The satellites provide the telescope with its latitude, longitude, and correct time...if you choose Automatic [alignment], you need only stand back and watch as the telescope goes through its 5-minute alignment dance...How well does it work? Remarkably well. The GPS fix can take anywhere from a few seconds to several minutes, depending on the availability of GPS satellites overhead...

The LX200GPS offers many features that make it an attractive choice for anyone considering an advanced telescope, regardless of the GPS technology…When set up in altazimuth mode on the included tripod, the LX200GPS is rock solid. It was hard to induce vibrations in the image, and any that were imparted damped in less than a second – as good as we've seen in any Schmidt-Cassegrain...the electric microfocuser slides the eyepiece or camera back and forth, providing precise hands-off and jitter-free focusing, just as advertised...Based on our experience, we can recommend the Meade 8-inch LX200GPS as a fine choice for the serious beginner and the advanced amateur alike. Considering its features and performance, it is a terrific bargain." — **from the review in *Sky & Telescope,* March, 2003.**

Included as standard equipment on all LX200GPS Schmidt-Cassegrain models, the Meade Zero Image-Shift Microfocuser operates at 4 speeds from extremely slow to fast; the entire microfocusing operation is actuated through the Autostar II handbox and powered from the telescope's control panel. Coarse manual focusing is effected through the telescope's manual focus knob.

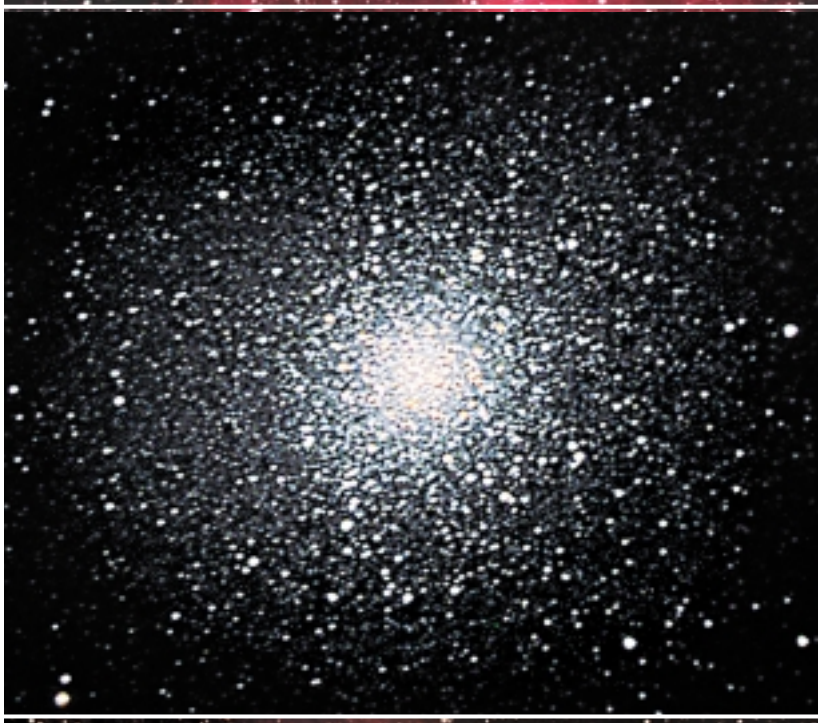
High-Precision Pointing™ (HP) Capability: Meade LX200GPS models permit the most accurate pointing

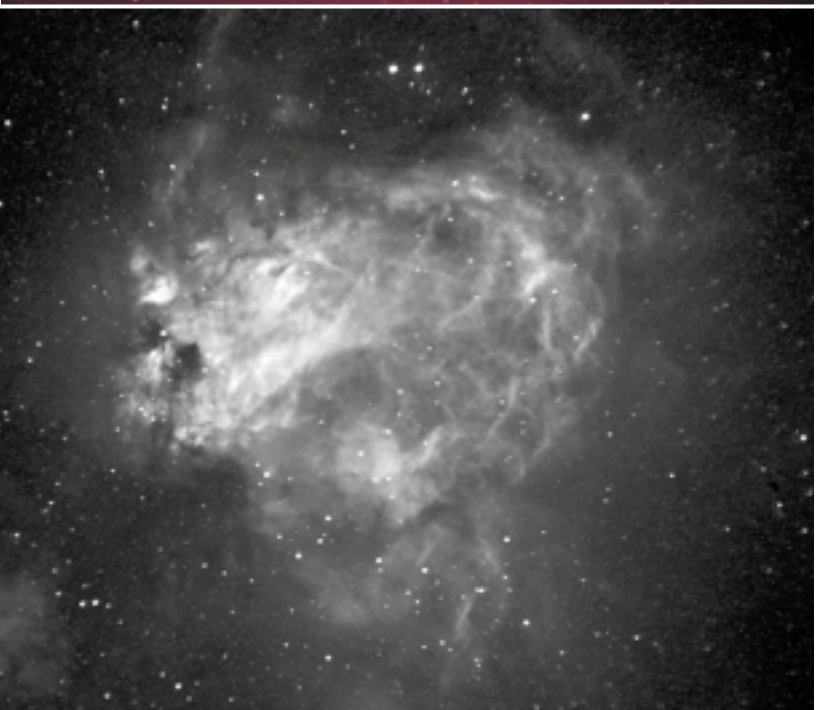
"...What more can I say: I've had the 8" LX200GPS for a little over one year and I think it is fantastic. The telescope is a well-made, precision instrument that has lived up to all of my expectations. The Autostar control is great, simple to use and with a very extensive catalog of objects. The telescope's GO TO capability has just made all the difference in my observing, moving quickly from objects in the Solar System to the Messier and NGC object catalogs. I think anyone would be hard pushed to beat the 8" LX200GPS for quality, performance, and value for the money. It will be a long time before I outgrow this telescope."

— Steven Anderson, Wilmington, DE.

capability ever offered in a commercial telescope. Now you can command the telescope to GO TO an object located on the opposite side of the sky (for example, a distance of 120 degrees in sky-angle) and, in conjunction with the

Images by Greg Pyros of Costa Mesa, Calif., with the Meade 10" LX200 Schmidt-Cassegrain: Mr. Pyros used the Meade Pictor 1616XTE CCD Imager with his 10" LX200 to image *(clockwise from upper-left)* the **Whirlpool Galaxy (M51) in Canes Venatici;** the **Rosette Nebula (NGC 2237) in Monoceros;** the **Hercules Globular Cluster (M13);** the **Horsehead Nebula (IC 434) and Flame Nebula in Orion;** the **Swan Nebula (M17) in Sagittarius** (black and white image); and the **Lagoon Nebula (M8) in Sagittarius.** Comments Mr. Pyros, "Having used my Meade 10" LX200 for over two years in imaging applications and having compared it to many competing instruments, it is obvious to me why your Schmidt-Cassegrains are the market leaders by such a large margin. From just about every significant performance aspect — superior optics, software sophistication, mounting, and tracking/pointing to name only a few — the LX200 is simply a fantastic product."





telescope's unique SYNC command, *the LX200GPS locates and centers the desired object to within a precision of about one arc-minute.* HP capability is accessible in either the altazimuth or equatorial orientations.

For casual observing such high precision in pointing is not generally required, since even without HP-mode pointing, the LX200 is capable of locating objects to within a pointing precision of about 2 arc minutes or better. But consider some of the situations where High-Precision Pointing means the difference between seeing, or imaging, an object, and not:

Suppose you wish to CCD-image a supernova in a 16th-magnitude galaxy — a galaxy invisible *except* through the process of CCD imaging. With the LX200GPS in HP-mode, the galaxy can be placed on the chip of every available CCD unit. An LX200GPS in the HP-mode places *every* object on *every* CCD chip virtually *every* time.

Photographing faint objects such as the planet Pluto, or asteroids or comets near the photographic limit of the telescope, and plotting the motion of these objects night-to-night, now becomes practical, since the photograph may be taken *without the observer ever having seen the object visually,* knowing that the LX200GPS in HP-mode operation will precisely center the object in the telescopic field.

"As an amateur astronomer I had the opportunity to contribute images of Comet 19P Borrelly to JPL during the month leading up to the Deep Space I fly-by of the comet on September 22, 2001. The images were used to estimate cometary dust production for the encounter. My Meade equipment, consisting of a 10" LX200, Pictor 1616XTE Imager, dichroic color filters, and Pictor 201 Autoguider, performed flawlessly. My data compared very favorably to that acquired by professional observatories prior to my imaging. Data processing by JPL showed very similar results and error ranges equal to or better than other data collected. The culmination of the effort was nearly simultaneous images acquired with the 200" Palomar telescope and with my system. The feedback from JPL was that these two datasets agreed completely. My "all Meade" system is reported to be the only source of data available to JPL between August 15 and September 15. I cannot express the high level of satisfaction I had being able to contribute scientifically meaningful data with my Meade equipment." **— Dr. Ralph P. Pass III, Andover, MA.**

The Autostar II hand controller in its LX200GPS mounting bracket.

Control Panel Functions: Use the telescope's control panel for direct connection of CCD imagers and autoguiders; plug in an illuminated reticle eyepiece for photo-guiding, adjusting reticle brightness from the Autostar II handbox; or power the standard-equipment Zero Image-Shift Microfocuser. Two RS-232 serial interface connectors are provided. The telescope's flash memory may be upgraded through one of the RS-232 ports with new software or data as they become available on the Meade website (www.meade.com).

The Moon, photographed by Christian Arsidi through a Meade 10" Schmidt-Cassegrain telescope. The two adjoined craters at center of the photo are Theophilus *(upper-right-center)* and Cyrillus.

Altazimuth Operation: For all visual observing applications, for lunar and planetary photography, and for many CCD imaging applications, Meade LX200GPS models may be set up in the altazimuth mode — just attach the telescope's drive base directly to the tripod, use the GPS alignment procedure, and the telescope's computer actuates 2-axis tracking that keeps objects precisely centered in the field, even at high powers, during the entire observing session. For long-exposure astrophotography (longer than about 5 minutes) altazimuth-induced field rotation requires an equatorial wedge or the #1220 Field De-rotater *(p. 24),* either of which may be purchased separately.

"I have purchased few things in my life that have so vastly exceeded my expectations as the Meade 10" LX200.…I have owned several telescopes and spent countless hours enjoying the heavens. But [my first evening with the LX200] was by far the most incredible experience of them all. I am looking forward to many more. Thank you for developing this truly extraordinary instrument."

— Richard Hammar, Springfield, MO.

Field Operation: LX200GPS telescopes operate for about 20 hours from eight C-cells neatly stored inside the fork arms. Alternately, telescope powering may be effected from an automobile cigarette lighter plug (using the optional #607 Power Cord) or from a standard home outlet (using the optional #547 AC Adapter).

"I recently purchased one of your 10" f/10 LX200 Schmidt-Cassegrains. After owning many telescopes, and I do mean many, I have finally found the telescope of a lifetime. The Meade optics are the best I have ever seen. The sturdiness of the mount with its incredible pointing accuracy, combined with all the excellent features make this the Ultimate Telescope. I could go on and on…"

— Bobby Lindsey, Sequin, TX.

Meade 10" LX200GPS
Schmidt-Cassegrain
Telescope.

Meade 8" LX200GPS
Schmidt-Cassegrain
Telescope.

Specifications: 8" Model LX200GPS—Includes 8" Schmidt-Cassegrain optical tube assembly (D = 203mm, F = 2000mm f/10) with MgF_2 coatings on the correcting lens and standard aluminum coatings on the primary and secondary mirrors (Ultra-High Transmission Coatings, p. 26, available optionally); primary mirror lock; 4-speed Zero Image-Shift Microfocuser; heavy-duty fork mount, with 4"-diameter sealed polar ball bearing, quartz-microprocessor-controlled 5.75" LX worm gears on both axes, and multi-function control panel; manual and electric slow-motion controls on both axes; setting circles in RA and Dec; Autostar II control system with 3.5-Megabyte flash memory, digital readout display, permanently-programmable Smart Drive and 185-speed drive controls on both axes, High-Precision Pointing, and 145,000-object onboard celestial software library; GPS alignment system with 16-channel GPS receiver, magnetic declination compensation, and true-level and North electronic sensors; 12v DC telescope power supplied from internal battery compartments accepting 8 (user-supplied) C-cells (optional 25 ft. cords are available for powering from auto cigarette lighter plug or from 115v AC); 8 x 50mm viewfinder; eyepiece-holder and diagonal prism (1.25"); Series 4000 Super Plössl 26mm eyepiece; variable-height standard field tripod; operating instructions.

Specifications: 10" Model LX200GPS—Includes 10" Schmidt-Cassegrain optical tube assembly (D = 254mm, F = 2500mm f/10) with MgF_2 coatings on the correcting lens and standard aluminum coatings on the primary and secondary mirrors (Ultra-High Transmission Coatings, p. 26, available optionally); primary mirror lock; 4-speed Zero Image-Shift Microfocuser; heavy-duty fork mount, with 4"-diameter sealed polar ball bearing, quartz-microprocessor-controlled 5.75" LX worm gears on both axes, and multi-function control panel; manual and electric slow-motion controls on both axes; setting circles in RA and Dec; Autostar II control system with 3.5-Megabyte flash memory, digital readout display, permanently-programmable Smart Drive and 185-speed drive controls on both axes, High-Precision Pointing, and 145,000-object onboard celestial software library; GPS alignment system with 16-channel GPS receiver, magnetic declination compensation, and true-level and North electronic sensors; 12v DC telescope power supplied from internal battery compartments accepting 8 (user-supplied) C-cells (optional 25 ft. cords are available for powering from auto cigarette lighter plug or from 115v AC); 8 x 50mm viewfinder; eyepiece-holder and diagonal prism (1.25"); Series 4000 Super Plössl 26mm eyepiece; variable-height standard field tripod; operating instructions.